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ABSTRACT

The process for producing a polymeric actuator according to the invention is a process for producing a polymeric actuator comprising an ion-exchange resin product and metal electrodes which are formed on the surface of the ion-exchange resin product and are insulated from each other and functioning as an actuator by applying a potential difference between the metal electrodes in such a state that the ion-exchange resin product contains water to allow the ion-exchange resin product to undergo bending or deformation, wherein the following steps (i) to (iii) are repeatedly conducted to form the metal electrodes ranging from the surface of the ion-exchange resin product to the inside thereof; (i) a step of allowing the ion-exchange resin product to adsorb a metal complex (adsorption step), (ii) a step of reducing the metal complex adsorbed on the ion-exchange resin product by a reducing agent to deposit a metal on the surface of the ion-exchange resin product (deposition step), and (iii) a step of washing the ion-exchange resin product having the deposited metal (washing step). By the formation of metal electrodes through the above steps, a polymeric actuator having simple structure, capable of being easily miniaturized,

showing quick response and capable of generating large displacement can be obtained.

The polymeric actuator 1 of the invention comprises an ion-exchange resin product 2 in the form of a slender

5   rectangular flat sheet and metal electrodes 3a, 3b which are formed on the surface of the ion-exchange resin product 2 and are insulated from each other, and the polymeric actuator is designed so that the ion-exchange resin product 2 undergoes bending or deformation by

10 applying a potential difference between the metal electrodes in such a state that the ion-exchange resin product contains an alkylammonium ion-containing aqueous solution. This polymeric actuator has excellent flexibility, is lightweight, has quick response and is

15 capable of generating large displacement.